

Exercise 1

Financial Projection for a Candy Company

A candy company is planning to introduce a new product. They have built a spreadsheet model to predict sales for the first seven years. There are four tabs in the spreadsheet: Operating Costs, Units, Price and Cost, and Overall Financial Model.

Operating Costs Tab

This tab contains information for predicting operating costs. The values are directly entered for Years 1 and 2. Use the growth rate given in the spreadsheet to calculate operating costs for Years 3-7.

Units Tab

This tab contains information used to estimate number of units sold in three steps:

- Step 1: Estimate the number of stores in each of three distribution channels: convenience stores, grocery stores, and mass stores. The estimates for Years 1 and 2 are already entered. These values are based on the candy company's sense of how current negotiations with the stores are going. You will calculate the estimates for Years 3-7 based on the growth rate given in the spreadsheet. You can display the store counts as whole numbers in your sheet, but **don't** actually round the values.
- Step 2: Calculate the number of units each type of store will sell annually using the Annual Units per Store by Channel given in the spreadsheet.
- Step 3: Add up the total units across the three store types (convenience, grocery, and mass merchandise).

Price and Cost Tab

Under this tab, you will find the following information:

- Wholesale Price: This is the per unit price the candy company plans to charge the convenience, grocery, and mass stores.
- Per Unit Cost: This contains the cost structure for production.

Overall Financial Model Tab

This tab contains an empty table which you will use to construct the financial model. The values for Total Units, Wholesale Price, and Operating Costs can be filled in on this sheet with references to other tabs.

The Cost of Goods is the total cost of producing the number of units needed for the year.

Use these relationships:

- $\text{Cost of Goods} = \text{Total Units} * \text{Per Unit Cost}$
- $\text{Revenue} = \text{Total Units} * \text{Wholesale Price}$
- $\text{Operating Income} = \text{Revenue} - \text{Cost of Goods} - \text{Operating Costs}$

Fill in the financial model using the estimates given for initial levels of units and costs, for growth rates, and for costs.

Exercise 1

You will work with this spreadsheet model to answer questions about the financial projections and the sensitivity to assumptions. Please consult the "Answers" on the last page of this document to confirm that you are on track as you work. **There are many ways to get the right answers.** Challenge yourself to find efficient and robust ways.

To check your work, here are the correct values for the Overall Financial Model.

Financial Model							
	Year	Year	Year	Year	Year	Year	Year
	1	2	3	4	5	6	7
Total Units	280,000	697,500	746,325	798,568	854,467	914,280	978,280
Wholesale Price	\$ 0.40	\$ 0.40	\$ 0.40	\$ 0.40	\$ 0.40	\$ 0.40	\$ 0.40
Revenue	\$ 112,000	\$ 279,000	\$ 298,530	\$ 319,427	\$ 341,787	\$ 365,712	\$ 391,312
Cost of Goods	\$ 56,000	\$ 139,500	\$ 149,265	\$ 159,714	\$ 170,893	\$ 182,856	\$ 195,656
Operating Costs	\$ 60,000	\$ 100,000	\$ 107,500	\$ 115,563	\$ 124,230	\$ 133,547	\$ 143,563
Operating Income	\$ (4,000)	\$ 39,500	\$ 41,765	\$ 44,151	\$ 46,664	\$ 49,309	\$ 52,093
Operating Income = Revenue-Cost of Goods-Operating Costs							

Calculating and Understanding the Model

- 1) Find the estimated **operating costs** in **Year 6**. Report your answer rounded to the nearest dollar.
- 2) How many **grocery stores** will carry the new product in **Year 6**? Report your answer rounded to the nearest whole number.
- 3) How many **units** will be sold in **convenience** stores in **Year 7**? Report your answer rounded to the nearest whole number.
- 4) How many **total units** do you estimate for **Year 5**? Report your answer rounded to the nearest whole number.
- 5) How much would it **cost to produce 350,000 units**? Report your answer rounded to the nearest dollar.
- 6) What is **operating income** in **Year 7**?

Exercise 1

Extrapolation of the Model

- 7) Extend the model to **Year 10**. What is the **Operating Income in Year 10**? Report your answer rounded to the nearest dollar.

- 8) Extend the model to **Year 12**. Suppose the **growth in number of stores** carrying the product is **8% annually** *(for all the years starting with the growth from Year 2 to Year 3)* instead of 7%. What would the **Operating Income in Year 12** be, in that case? Report your answer rounded to the nearest dollar.

Sensitivity to Assumptions

Remember to **RESTORE** the original growth rate in the number of stores before answering these questions.

- 9) What is the **highest possible growth rate in operating costs** that will result in **non-negative Operating Income in Year 4**? Report your answer as a percentage rounded to exactly two decimal places, e.g., 49.0185% would be 49.02%.

- 10) Remember to **RESTORE** the original growth rate in operating costs before answering this question. What is the **lowest growth rate in number of stores** carrying the product that will result in **at least \$20,000 of Operating Income in Year 7**? Report your answer as a percentage rounded to exactly two decimal places, e.g., 49.0185% would be 49.02%.

Answers

- 1) \$133,547
- 2) 85
- 3) 536,476
- 4) 854,467
- 5) \$70,000
- 6) \$52,093
- 7) \$61,339
- 8) \$95,067
- 9) 26.38%
- 10) 3.23%